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Authors

Romm, Daniel
Zhang, Hongyu
Verma, Priyanka
et al.

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"Data Horror": Mapping (Spatial) Data Privacy Violations onto a Cognitive Account of Horror

Daniel Romm, Hongyu Zhang, Priyanka Verma, Grant McKenzie, and Emily Chen

Platial Analysis Lab, McGill University, Montreal, QC, Canada
`daniel.romm@mail.mcgill.ca`

Abstract. While spatial data privacy is not a new concern, recent information technology developments that allow for the increased collection and alternative use of spatial data have brought the discussion about geoprivacy back in focus. In this work we draw a parallel between a conceptualization of horror based on work from cognitive scientists and philosophers, and the intrusiveness of current data collection methods, the unauthorized use of this data, and the transgressions made by data stewards. By drawing this connection, we discuss the familiar topic of data privacy through a novel and jarring lens that clarifies the importance of data privacy and elucidates the particular importance of geoprivacy.

Keywords: privacy · horror · data science · spatial · geoprivacy

1 Introduction

A common feature of many sci-fi narratives is the erosion of privacy in a dystopian setting. Indeed, part of the dystopia is the wearing away of the separation between the public and the private, or, more essentially, the public and the *self*. In episode *Arkangel* of the sci-fi anthology television series *Black Mirror*, a mother uses a new technology that enables her to see her daughter's perspective from a tablet computer, to regularly intrude on her daughter's privacy — eventually culminating in tragedy when her daughter realizes the extent of her mother's transgressions. In episode *The Entire History of You* of the same series, a technology allows individuals to see their memories as recordings, leading to several violations of privacy. In these instances the series introduces dystopian elements to the setting by showing the horrors of new technologies as they dismember privacy. These are examples of a uniquely modern horror, namely, *data horror*.

In this short paper, we map data privacy violations, with an emphasis on violations involving spatial data, onto a cognitive account of horror, which allows us to outline a suggestive conception of the affective response of people to transgressions of their data privacy. Our motivating presupposition is that our account of horror, based as it is on our cognitive architecture, will be analytically productive when applied to the domain of data privacy violations and spatial data privacy violations in particular. Methodologically, our process can be understood as exapting an account of the cognitive machinery that responds to horror to offer an explanation of how this same cognitive machinery comprehends transgressions of another sort — of our privacy. The emergent thesis is that the occurrent emotional reaction to data privacy violations parallels, in the extreme case, that of horror. Through an understanding of "threat", in the horror context, as

embodied and proximal, as well as the connection between data privacy and the self, this conceptualization also elucidates the particular nature of *spatial* data privacy violations.

2   A Cognitive and Philosophical Account of Horror

In his seminal work on horror, Carroll [6] defines the concept as an "occurrent emotional state" with both an affective (physiological) and a cognitive component. As Asma [2], drawing on emerging cognitive and neuroscience research on fear, insightfully notes, while the affective and cognitive components of fear (and horror) often appear as "one unified experience", in actuality the affective comes before the cognitive. Of course, because the affective is in a sense pre-cognitive, it is also pre- or a-rational [4].

The effect of horror also appears to be totalizing, a state in which "everyday familiarity collapses" [17]. The elements here described, of a pre-cognitive, a-rational, and totalizing affect, do not themselves serve to individuate horror as an emotional state; it is the cognitive dimension of horror which engenders its physiological symptoms [6]. In other words, some*thing* must be cognitively evaluated as "horrifying" so that the physiological components of fear may be felt. How, then, can the affective component be both pre-cognitive and induced by a cognitive evaluation? Asma [2] suggests that a way of resolving this causal dilemma is to understand physiological responses to fear as induced by "somatic markers" wired between the amygdala and the ventromedial prefrontal cortex that create "weighted behavioural options" that operate for "fast" decisions. The object of horror is evaluated as such cognitively, inducing an affective response, but the cognitive architecture employed by the fear system — over the so-termed somatic markers — is "encapsulated" from cognitive control [23]. What this angle of understanding suggests is that there is something about objects of horror that is *innately* horrifying.

The objects of horror — horror monsters, or, as Heidegger terms it, the "fearsome" [17] — meet two qualifications: they 1) pose a threat by 2) transgressing one's ontological scheme. Before considering the interplay between these two qualifications, it is noteworthy that in order to pose a threat, the fearsome must be embodied ("always something encountered within the world") and proximal ("approaching a nearness") [17]. This feature of the fearsome will later assist us in understanding spatial data privacy violations. The nature of the threat of the fearsome is *epistemically* illegitimate [14]. The fearsome is "Other", outside the *episteme*, literally abjected outside meaning as the unthought [13], the unknown [16], or, as Nietzsche [21] put it, "beyond actuality and the every day." The means through which the fearsome accomplishes this transgression is through its interstitiality. Carroll [6] initiates this term into the discussion on horror by way of Douglas's [11] invaluable study on pollution, *Purity and Danger*, in which she asserts that things which elicit disgust — the polluting or the impure — do so because they violate categorical norms. In this manner, director David Cronenberg frequently employs "body horror" to evoke horror through disgust, violating categories of internal/external (e.g. connecting to virtual reality by literally "plugging into" the body, as in *eXistenZ* (1999)). Douglas [11] argues that these categorical transgressions are evaluated as dangerous because what they transgress is our existential mode of understanding the world. Objects of horror are conceptually disturbing because what they are in violation of is our ontology [8, 6, 2]. While objects of horror frequently pose physical or bodily danger, they *necessarily* pose cognitive or existential danger by virtue of their ontic incomprehensibility. In this way, the fearsome undermines one's entire ontological attachment [17].

Horror sends us to the territory of the "completely unfamiliar", or, to borrow from Heidegger, the *Unheimliche* — the "uncanny" [17]. The German source of the term "uncanny" (*Unheimliche*) translates directly to *not-being-at-home* or "the unhomely" [17, p. 176]. Heidegger understands horror as a mode of existential unsettlement; this is what is meant by the totalizing aspect of horror. In Stanley Kubrick's (1980) *The Shining*, the climactic moment of horror arrives as the only non-possessed character, the audience's surrogate for the expanding horror, Wendy, flees her husband and for the first time begins to see the supernatural. The supernatural entities Wendy encounters are all in the aspect of the visceral: first, ghosts performing strange, presumably "impure" sex acts; then, a ghost with a brutal head wound; and finally, climactically, the iconic flood of blood from the elevators. The unreal has fully entered — supplanted even — the real. What this is filmically signifying is the collapse of the ontological frame and one's connection with reality, hence why horror is ultimately existential — it undermines one's entire existence [16]. As Orson Welles concludes the 1938 *The War of the Worlds* broadcast, he addresses the audience out of character to describe what they have done with their program: "We annihalated the world before your very ears."

3   Data Privacy Violations and Horror

In 2010, three privacy-minded individuals launched the website *Please Rob Me* (www.pleaserobme.com) in order to bring attention to "over-sharing and location awareness", or geoprivacy [15]. The conceit was that by mining Twitter posts for location data, it is possible to determine when someone was not home, and thus rob them. Despite every Twitter user volunteering their location data, the prospect that this data could be used by an ill-intentioned individual is horrifying. The two qualifying elements of horror are present here: first, the intention of the website is to reveal a danger, or a threat, and so the first criterion is satisfied; second, the nature of the threat is the undermining of the distinction between public/private, and so the second criterion is satisfied. What this website demonstrates is the modern reality of the possibility of *data horror*.

Set alongside the more visceral ontological categories outlined in the preceding section, the public/private distinction seems inconsequential and drastically more contemporary. Our account of horror is girded by arguments about our cognitive architecture — how can something so recent be wired into our cognition? Clasen [8], adopting a biocultural approach to understand the cognitive fear system, describes a typology of three forms of fear: universal fears (e.g. predation, contamination), near-universal fears, and local (or idiosyncratic) fears. The middle form — near-universal fears — is explanatory for our consideration of "data horror". Clasen describes near-universal fears as those that are "genetically transmitted" but "environmental[ly] calibrat[ed]"; biologically, these may be understood as "prepared fears" [24], "potentialities that may be activated" [8]. This explanation parallels Asma's [2] aforementioned consideration of "somatic markers", which accounts for fears molded throughout one's experiences. Our cognitive architecture is plastic and therefore able to respond to our modern environment, in which *virtual data* now accompanies blood and spit as one of the fundamental constituents of human. On this presupposition that the same cognitive processes apply to matters of virtual data, and that the use or *mis*-use of data can both pose a threat and violate closely held categorical norms, we can map data privacy violations onto our conceptualization of horror based on the affective response they engender — their "felt" severity.

In the data science literature there generally is little consideration of individuals' psychological response to experiences of data privacy violations. Privacy is personal, and the personal is ultimately psychology; with this elision, the field is poorly positioned to comprehend the motivations behind users' decision-making around data privacy. Research often assumes or concludes that consumers react with a "rational assessment and deliberate decision process suggesting that sharing private information is a cognitive, rather than affective, concept" [1]. Yet, consumers do not react to intrusive data practices through a solely rational process: consumers presume ownership over their data; when this expectation is violated, they experience an affective vulnerability that engenders strong emotional reactions. Budmir et al. [5] finds that individuals experience a "strong negative affective stress reaction" after a cybersecurity breach. Durnell et al. [12] identifies particular emotional reactions: those who have experienced a privacy violation are less cheerful, calm, relaxed, and joyful; and more angry, astonished, hostile, and disgusted. This suggests that the affective-cognitive experience of a data privacy violation shares some similarity with other transgressions of our normative expectations, in that they both engender negative emotional states involving fear [9].

There is also the common element of the notion of *transgressions* with some even framing data privacy violations as "border crossings" [20]. What is deemed a *violation* of privacy is a transgression of our normative expectations when it comes to our data [22]. When individuals experience data privacy violations, they often describe the intrusion as "creepy" [25]. Shklovski et al. [25] works with Nissenbaum's concept of contextual integrity to suggest that this feeling of "creepiness" results from "encountering a violation of contextual integrity of one's information" (p. 2349). Creepy behaviour "pushes against" social norms, exposes a discrepancy between the norms of firms and consumers, or exposes the absence of relevant norms [26, p. 61]. Framed differently, the experience of privacy violations is in the aspect of the uncanny, where "creepy" substitutes for other descriptors of that particular frisson that arises from the feeling of being intruded upon.

There is a more vital way in which data privacy affects us, beyond discomfort. "Privacy, as respite from the public gaze, therefore protects two aspects of individuality: our ability to be distinct individuals and our ability to have an authentic inner life and intimate relationships" [3]. The ontic question, then, is of the separation not only between the public and the private, but of the public and the *self*. Austin [3] suggests that primacy should not be given to the *collection of* nor one's *control over* data, but to "the extent to which we are *known* by others" (p. 150, emphasis added). The boundaries involved are not those only of public/private, but of the boundaries of self and other, the ability to be known or *not known*, and in its most extreme expression, the integrity of the self against its dissolution. In Steven Spielberg's (2002) *Minority Report*, not only is the private domicile literally intruded upon, as when the "spiders" enter residents' homes and scan their eyes, but the *self* is intruded upon as the "precogs" enter the private thoughts of individuals to presage their actions, implicating the very agency of the individual. Herein lies horror: not only through the dissolution of privacy in the abstract, but through its most paradigmatic case — the privacy of our thoughts — and the dissolution of the self.

In this emphasis of the self in matters of privacy, we have two avenues for considering the differential importance of matters of spatial data, or geoprivacy. First, we can return to Heidegger's identification of the spatial aspect of the fearsome. Recall that the fearsome is embodied (and therefore spatial) and proximal. Following, where matters of data privacy are spatial, we are *prima facie* closer to the fearsome; or, inverted, in order for a

data privacy violation to enter the realm of the fearsome it must be spatial. Second, we have the importance of the (necessarily embodied) self to matters of privacy writ large. The mantra "spatial is special" also applies to data privacy [18]. These arguments offer practical considerations for the unique nature of spatial data — it is easy to capture, for example — and for the unique possibilities of its use — it enables location-based inferences going beyond what the user expects or consents to with that data, for example. There is a theoretical argument being made here: that spatial is special simply because it is embodied. The *Pantopicon*, in all its instantiations, involves the collection of spatial data [10]. There is a reason why images of ubiquitous surveillance necessarily involve the spatial. Our interaction with technology is always mediated through an interface. Dystopian images involving the collection of spatial data also necessitate the shrinking, or even the disappearance, of the mediating interface until the individual is completely — ubiquitously — connected to ("plugged into") the technology. The collection and use of spatial data erodes the interface between the embodied self and the digital self. The degree of privacy intrusion corresponds to the precision of the user's location in the data: the closer the level of location data is to the body (the more precise), the more intrusive that data's collection or use [18]. Clarke and Wigan [7] details many possible harms attributable to location data, including "psychological harm through embarrassment, loss of control over one's life, and the devaluation of the individual, which arises from the knowledge that the person is being watched" (p. 151). Merely the notion that one *might be observed* is enough to modify behaviour and engender a chilling effect. It is worth remembering that the aspect of fear and horror depends on a cognitive evaluation of the fearsome as transgressing ontological expectations; this means that what is important to fear and horror is not whether spatial data collection *actually* leads to more severe privacy violations (although research indicates that it does), but whether individuals *perceive* spatial data collection as more intrusive. Correspondingly, geospatial technologies are routinely thought of in the aspect of fear, involving dystopian sci-fi favourites such as Orwell and Bradbury [19]. Importantly, "much of what we pretheoretically call science fiction is really a species of horror, substituting futuristic technologies for supernatural forces" [6]. Data horror, then, is in this regard a spatial horror.

4   Conclusion

In this short paper we have considered the constitution of the modern horror of data privacy violations. Beginning with a conceptualization of horror as an occurrent affective-cognitive emotional state, involving the transgression of ontological expectations towards the collapse of one's entire understanding of the world, we have constructed a unique perspective to view data privacy violations. Such violations are found to parallel our understanding of the "fearsome" in general, both in the affective response to data privacy violations and their nature in terms of transgressing normative expectations. This connection enables an understanding that the dissolution of privacy involves, in its ultimate expression, the dissolution of the self. Finally, from this work, we are well-positioned to identify the importance of geoprivacy to protect against data horror: horror is embodied and spatial data is more intrusive, and perhaps more fearsome, because it is also embodied. Our construct of data horror is valuable in setting the groundwork for understanding the cognitive-affective response to data privacy violations and for understanding the differential importance of spatial data privacy.

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